

A	B	C	D	E	F	G	H	I	J	K	L	
1		<b>TOPEX GDR Correction Product</b>										
2		<b>File Specification</b>					File: gdr-corr-gcp021	<b>Date: 02/01/14</b>				
3												
4		<b>01/14: Cleanup, ready for release.</b>										
5												
6		<b>Basic assumptions, attributes:</b>										
7		1. There will be a one-to-one correspondence between correction files and GDR pass files.										
8		2. There will be one correction record for each GDR record (point), even if the retracking did not converge										
9		or produce a usable result.										
10		3. Except for the time-tag (can be used to check that item #1 is obeyed) and sigma0s, all correction items are to be										
11		ADDED to the corresponding TOPEX GDR or PO_DAAC MGDR-B to produce a corrected/improved value.										
12		Geophysical effects (tides, inverse barometer, mean sea surface, geoid) have the sign of the effect and are to be subtracted from the sea surface height.										
13		4. Jason values are full values. They are for compatibility/replacement when comparing TOPEX and Jason data.										
14		5. Header records will be in a parameter=value format.										
15		6. Header records will all be the same length = 2*record length (see "Total bytes" below). There are 86 header records.										
16												
17		7. The file header will be a <b>copy of the GDR header plus</b>										
18		1 Correction_File_Gen_Time = system time from processing computer										
19		2 Correction_File_Gen_Software_Version = Vm.n-yyyy-mm-dd										
20		3 Correction_File_SIS_Id = Vm.n-yyyy-mm-dd										
21		4 Number of records with no/bad retracking correction, rdr_no_correction = xxxx [count]										
22		5 Total calibration correction to sigma0_K, SigK_cal_tot = xx.xx [dB]										
23		6 Total calibration correction to sigma0_C, Tot_SigC_Cal = xx.xx [dB]										
24		7 Change to GDR calibration correction to sigma0_K, SigK_cal_gdr_change = xx.xx [dB]										
25		8 Change to GDR calibration correction to sigma0_C, SigC_cal_gdr_change = xx.xx [dB]										
26		9 WFF instrument range correction (not temperature adjusted), WFF_Range_Corr = xx.xx [mm]										
27		10 Retrack_Process_Time = system time from processing computer for rdr										
28		11 Retrack_Software_Version = version identifier and date: Vm.n-yyyy-mm-dd										
29		12 Retracking input, K band PTR file, PTR_file_K = xxxxxxxx.dat										
30		13 Retracking input, C band PTR file, PTR_file_C = xxxxxxxx.dat										
31		14 Retracking input, K band parameter file, rdr_param_K = xxxxxxxxxx.dat										
32		15 Retracking input, C band parameter file, rdr_param_C = xxxxxxxxxxxx.dat										
33		16 Retracking input, K band calibration weights, rdr_cal_wgt_K = xxxxxxxxxxxx.dat										
34		17 Retracking input, C band calibration weights, rdr_cal_wgt_C = xxxxxxxxxxxx.dat										
35		18 Retracking input, K band noise scaling constant, rdr_noise_scale_K = 0.xx										
36		19 Retracking input, C band noise scaling constant, rdr_noise_scale_C = 0.xx										
37		20 Retracking input, Unweighted estimation flag, rdr_unweight_est = 1 [default] or 0										
38		21 TMR Tb18 loss correction from Ruf TMR correction memo, Tb18_loss_corr = xx.xx [dB]										
39		(Note rdr swh and range adjustments are done so that average range and swh change for cycles xx[20]-xx[25] are 0.)										
40		22 K band SWH adjustment North Ascending so rdr=gdr for early cycles, rdr_swhK_adjust_NA = xx.xx [m]										
41		23 K band SWH adjustment South Ascending so rdr=gdr for early cycles, rdr_swhK_adjust_SA = xx.xx [m]										
42		24 K band SWH adjustment North Descending so rdr=gdr for early cycles, rdr_swhK_adjust_ND = xx.xx [m]										
43		25 K band SWH adjustment South Descending so rdr=gdr for early cycles, rdr_swhK_adjust_SD = xx.xx [m]										

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44		26	C band SWH adjustment North Ascending so rdr=gdr for early cycles, rdr_swhC_adjust_NA = xx.xx [m]								
45		27	C band SWH adjustment South Ascending so rdr=gdr for early cycles, rdr_swhC_adjust_SA = xx.xx [m]								
46		28	C band SWH adjustment North Descending so rdr=gdr for early cycles, rdr_swhC_adjust_ND = xx.xx [m]								
47		29	C band SWH adjustment South Descending so rdr=gdr for early cycles, rdr_swhC_adjust_SD = xx.xx [m]								
48		30	K band range adjustment North Ascending so rdr=gdr for early cycles, rdr_rangeK_adjust_NA = xxxx [mm]								
49		31	K band range adjustment North Descending so rdr=gdr for early cycles, rdr_rangeK_adjust_ND = xxxx [mm]								
50		32	K band range adjustment South Ascending so rdr=gdr for early cycles, rdr_rangeK_adjust_SA = xxxx [mm]								
51		33	K band range adjustment South Descending so rdr=gdr for early cycles, rdr_rangeK_adjust_SD = xxxx [mm]								
52		34	C band range adjustment North Ascending so rdr=gdr for early cycles, rdr_rangeC_adjust_NA = xxxx [mm]								
53		35	C band range adjustment North Descending so rdr=gdr for early cycles, rdr_rangeC_adjust_ND = xxxx [mm]								
54		36	C band range adjustment South Ascending so rdr=gdr for early cycles, rdr_rangeC_adjust_SA = xxxx [mm]								
55		37	C band range adjustment South Descending so rdr=gdr for early cycles, rdr_rangeC_adjust_SD = xxxx [mm]								
56		38	Time-interpolated global average pressure from CNES for inverted barometer, global_avg_press = xxxx.xx [mb]. <b>Negative</b> if from annual model.								
57		39	Jason Constants , jas_constants = 32 char identifier								
58		40	Jason Constants , jas_constants = 32 char identifier								
59		41	Jason Mean Sea Surface Model , jas_mss = 32 char identifier								
60		42	Jason Geoid Model , jas_geoid = 32 char identifier								
61		43	Jason Tide1 Model , jas_tide1_model = 32 char identifier								
62		44	Jason Tide2 Model , jas_tide2_model = 32 char identifier								
63		45	Jason Tide Load Tide model, jas_load_tide_model= 32 char identifier								
64											
65						Total Bytes=					
66						52					
67			<b>Item Name</b>	<b>Storage Type</b>	<b>Units</b>	<b>Size</b>	<b>Offset</b>	<b>Description</b>			
68		1	Time_Past_Epoch	utc_binary		8	0	Time elapsed between Time_Epoch_Value and the altimeter midframe time. Copied from GDR [to rdr?] to gcp. See GDR SIS.			
69		2	gcp_SeaSurfHght	signed int	mm	1	8	Total correction to TOPEX GDR sea surface height = -( gcp_Alt_Range + gcp_EMB_K + gcp_Iono + gcp_Wet_Tropo_Rad + range_adjustK_quadrant. Does NOT include WFF range calibration listed in header.			
70		3	gcp_Alt_Range	signed int	mm	1	9	Total correction to MGDR-B altimeter range (including acceleration correction)			
71		4	gcp_SWH_K	signed int	0.1m	1	10	Retracking correction to SWH_K + rdr_swhK_adjust			
72		5	gcp_SWH_C	signed int	0.1m	1	11	Retracking correction to SWH_C + rdr_swhC_adjust			
73		6	gcp_Sigma0_K	signed int	0.01 dB	2	12	Total corrected sigma0_K (Note: full value to avoid GDR/MGDR differences)			
74		7	gcp_Sigma0_C	signed int	0.01 dB	2	14	Total corrected sigma0_C (Note: full value to avoid GDR/MGDR differences)			
75		8	gcp_EMB_K	signed int	mm	1	16	Total correction to Walsh EMB_K			
76		9	gcp_EMB_C	signed int	mm	1	17	Total correction to Walsh EMB_C			
77		10	gcp_EMB_K_G4	signed int	mm	1	18	Total correction to Gaspar BM4 EMB_K			
78		11	gcp_Iono	signed int	mm	1	19	Total correction to ionospheric range correction			
79		12	gcp_OffNadir	signed int	0.01 deg	1	20	Retracking correction to off nadir angle (GDR est from waveform "Vatt")			
80		13	gcp_rangeK	signed int	mm	1	21	Retracking correction to K band range + rdr_rangeK_adjust_quadrant			
81		14	gcp_rangeC	signed int	mm	1	22	Retracking correction to C band range + rdr_rangeC_adjust_quadrant			
82		15	Geo_Bad	unsigned enum		1	23	Geo_Bad copied from GDR.			

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83			16	gcp_SSH_Bad		unsigned	enum	2	24		SSH_Bad modified Bits (0-9) indicating points used in smoothing retracked range to center value (0. 1=not). XX[Bit 13 indicates if change from gdr to rdr]XX	
84			17	gcp_Alt_Bad1		unsigned	enum	1	26		Alt_Bad1 modified to reflect compression in rdr; from rdr_ancillary.	
85			18	gcp_Flag		unsigned	enum	1	27		Flag indicating retracking quality. See bit definition below.	
86			19	gcp_accCorr		signed int	mm	1	28		Acceleration correction estimated in retracking to remove GDR correction.	
87			20	rdr_pts_avg		unsigned	enum	1	29		Number of 10/frame pts smoothed to produce gcp_range_K	
88			21	gcp_Tb18		signed int	0.01 K	1	30		Correction to TMR Tb18 from C. Ruf algorithm for leakage correction.	
89			22	gcp_Wet_Tropo_Rad		signed int	mm	1	31		Correction to wet tropo from change in Tb18.	
90			23	gcp_Geo_Bad2		unsigned	enum	1	32		New flag for compatibility with Jason. See bit definitions below.	
91			24	gcp_Invert_Barom		signed int	mm	2	33		Inverted barometer correction with respect to time-interp CNES global avg pressure.	
92			25	jas_Land_Flag		unsigned	enum	1	35		Jason land flag.	
93			26	jas_Mean_Sea_Surf		signed int	mm	4	36		Jason mean sea surface model.	
94			27	jas_Geoid		signed int	mm	4	40		Jason geoid model.	
95			28	jas_Tide1		signed int	mm	2	44		Jason tide model 1=GOT99. Elastic Ocean Tide= GOT Model +Long period +Load	
96			29	jas_Tide2		signed int	mm	2	46		Jason tide model 2=FES99. Elastic Ocean Tide= FES Model +Long period +Load tide	
97			30	jas_Load_Tide		signed int	mm	1	48		Jason Loading Tide from FES99.	
98			31	jas_Wind_Sp		unsigned	0.1 m/s	1	49		Jason wind speed from Vandemark et als model via equations. Range= 0 to 250 (max val in EMB table=20.75). 255=flag. (TOPEX max was 21.73 )	
99			32	jas_Comp_EMB		signed int	mm	2	50		Jason composite (Ku and C combined as in iono) EMB from table interpolation using jas_Wind_Sp and SWH=gdr_SWH_K + gcp_SWH_K .	
100												
101												
102			<b>gcp_Flag</b>			Bit= 0 indicates test was done and data passed. =1 indicates test not done or data failed. Spare bits =0. Used bits initialized to 1.						
103				bit0							0= RDR found and OK. 1=Bad/Missing	
104				bit1							0= rdrA_SSH_Bad = gdr_SSH_Bad (same). 1= pt changes in SSH_Bad XX[(also bit	
105				bit2							0= rdrA_Alt_Bad1 = gdr_Alt_Bad1 (same). 1= changes in rdr.	
106				bit3							0= calculation of swh_new from emb OK. 1= Not	
107				bit4							0= retrack_K_ChiSq < retrack_K_ChiSq_limit. 1= Not.	
108				bit5							0= retrack_C_ChiSq < retrack_C_ChiSq_limit. 1= Not.	
109				bit6							Spare (0)	
110				bit7							Spare (0)	
111												
112			<b>gcp_Geo_Bad2</b>									
113				bit0							TOPEX rain flag from recalc with corrected Tb18 g1257.	
114				bit1							New TOPEX rain flag different than original TOPEX rain flag (Geo_Bad bit 3) (0= No, 1= Yes)	
115				bit2							Jason rain flag using K-C sigma0 diff and liquid water.	
116				bit3							Jason ice flag.	
117				bit4							Jason tide1, GOT99. 0= OK. 1= Not available.	
118				bit5							spare	
119				bit6							Jason tide2, FES 99, 2-bit (b6,b7) flag based on number grid pts found. 0= 4 pts	
120				bit7							Jason tide2 flag (cont'd). 1(10)= 3 pts. 2(01)= 1 or 2 pts. 3(11)= out of gridded area.	
121												
122			<b>jas_land_flag</b>			Same bit definitions as Jason GDR:						
123											0 = Ocean. 1 = Enclosed sea, lake. 2 = Continental ice. 3 = Land.	